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6 October 1981

Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

(FOUO 11/81)



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BRAZIL

U.S. BREAK OF NUCLEAR FUEL CONTRACT FEARED

PY310045 Rio de Janeiro LATIN AMERICA DAILY POST in English 29 Aug 81 p 1

[Text] Brasilia (DAILY POST)--The United States may break a contract to supply enriched uranium fuel for Brazil's first atomic power station if Brazil refuses to permit international inspection of nuclear installations, a diplomatic source said.

Commenting on news reports that Washington has "threatened" to cut supplies, the source said, "You can say that there have been contacts between the two governments, and that the subject is under discussion."

Other sources close to the Brazilian nuclear power program told the ESTADO DE SAO PAULO newspaper that Brazil, foreseeing possible difficulty in supplies from the United States, had already negotiated fall-back uranium supplies from the British-Dutch-German URENCO consortium.

Brazil's first nuclear reactor, built by the North American Westinghouse Company, is due to start operational testing sometime in the next 2 months using 50 tons of enriched uranium already supplied by the United States.

Arguments now are about fuel to restock the reactor when its first charge is burned out in 3 years, the diplomatic source said.

O ESTADO DE SAO PAULO said U.S. officials had raised the subject with Brazil last week but gave no details of who made the contact. According to the paper the differences are "legalistic but serious" and could lead to a wider breach in relations.

Washington is insisting that a 1972 treaty with Brazil, which includes the International Atomic Energy Agency, should apply to all Brazilian nuclear facilities while Brazil says the treaty covers only equipment and material received directly from the United States, the newspaper said.

In addition to its first Westinghouse reactor, Brazil is now building up to eight more nuclear power stations and a fuel reprocessor as part of a multi-billion dollar deal with West Germany.

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Brazil is not a member of the IAEA and does not accept agency control over its nuclear program. An acceptance of this control or its equivalent, the paper said, would include submitting reports on the approximately 100 tons of non-enriched uranium Brazil has stockpiled.

The Brazilian Government recently denied news reports that it had secretly shipped eight tons of enriched uranium, produced from this stock, to Iraq for use in the reactor which was later bombed by Israel.

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CUBA

NUCLEAR TECHNOLOGY DEVELOPMENTS DISCUSSED

Havana BOHEMIA in Spanish 31 Jul 81 pp 8-13

[Text] At the Novovoronezh nuclear powerplant built 17 years ago in the central Soviet Union, a poster mounted over the entrance to the turbine room announces, in bold letters: "Let the atom be a worker and not a soldier!"

The phrase engraved there bears witness to the fact that just as at other power-plants in the great country of Lenin, the Soviets work here with feverish enthusiasm on the application of nuclear energy for peaceful purposes.

The scientists in the USSR are convinced -- and the highest leaders of the party and the government so proclaim -- that if not all, at least a large share of mankind will disappear from the face of the earth if the blind, brutal forces of the capitalist reactionaries and imperialism dare, with irresponsible determination, to set off atomic bombs.

The peaceful policy aimed at eliminating or substantially limiting atomic weapons, if we want life to continue on our planet, has been ignored by the capitalist powers, mainly the United States, contrary to the appeals for peace made by the Soviet Union and repeated warnings from the chairman of the Supreme Soviet, Leonid Brezhnev, that the atom should be used for the good of, not to the detriment of, mankind.

Cuba Before and After 1959

In "La Historia Me Absolvera" [History Will Absolve Me], Fidel reminded us that "everyone agrees that the need for industrialization of the country is urgent, that we need metallurgical industries, chemical industries, paper industries, "but the government stands idly by and industrialization never comes."

After the Revolution overthrew the old political-economic-social structure, Cuba began a new life and embarked upon the path of progressive alternatives, which could not fail to include agrarian reform, nationalization of the monopolies that exploited workers and farmers, and industrialization.

Before 1959, did we even have enough thermoelectric potential to embark upon that urgent and far-reaching undertaking?

Absolutely, positively not!

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As part of its broad range of constructive plans, the Revolution undertook national electrification and took electric power to the most remote rural regions of the country, where previously, the people had only known the traditional kerosene lamp or the typical native *chismosita*.

At the same time this extremely important source of energy was being developed, large industrial complexes were cropping up in all regions of Cuba, complexes that necessarily operate with electricity, and the raw material that moves this powerful machinery day and night is expensive and has to be imported.

Cuba does not have its own fossil fuels such as oil or coal, nor does it have large, powerful rivers that would provide it with water power to meet its future energy needs. Our country has no other alternative than to develop nuclear energy, which will meet the growing demand and which today, with the price of oil, is more economical than traditional sources.

In his address summarizing the events commemorating the seventh anniversary of the defeat of Yankee imperialism at the Bay of Pigs, Fidel said, in April 1968:

"When man discovered the energy contained in the atom, he discovered a source of energy capable of supplying the unlimited future needs of mankind. Atomic power, which mankind first came to know as an instrument of war and destruction, is at the same time the only solution of mankind in the future.

"Consequently, any country that has any foresight and that looks to the future has to think about the generation of electric power using nuclear energy. Our country cannot continue to build more and more electric powerplants based on oil. Once we have completed the current program to set up thermoelectric powerplants, we shall have to think about facilities that use atomic energy.

"That is why," Fidel said, "our Revolution is already recruiting outstanding students to study nuclear physics and become the engineers who will operate this type of plant. This is one of the issues of most interest to the world today."

Nuclear Science and Technology

Not only at the nuclear powerplants are the nuclear science and technology for peaceful purposes applied. They are also utilized for the production of radio isotopes and in many branches of the economy. In medicine, agriculture and industry, as well as in physics, chemistry and biomedical research, we find various uses.

Specific examples of its applications include the following: determination of soil moisture, the volume of rivers, the calcium and potassium content of grass and milk, densities and levels of industrial processes, mineral composition, the conservation of food by irradiation, and geological prospecting (exploration). In medicine, nuclear techniques are used for the treatment and diagnosis of different diseases, the sterilization of surgical equipment, and the creation of ideal conditions in which microorganisms that produce antibiotics must live, so as to improve productivity, and so on.

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Institute of Nuclear Physics (ININ)

This Institute, since 1974 known as the Nuclear Research Institute, was established with the fraternal, valuable help of the Soviet Union and as the culmination of the work done by the Nuclear Energy Group of the Cuban Academy of Science. It opened in January 1969.

Beginning on that date, with the advice of Soviet specialists, Cuba embarked upon the task of putting nuclear sciences on a scientific footing in our country. We would also have university graduates in radiochemistry, dosimetry, nuclear reactors and radiological protection, trained at the Moscow State University.

At the same time and without interruption, the training of Cuban technical and scientific cadres continued at various centers and institutions in the Soviet Union.

Along with the incorporation of the first graduates in the USSR, Cuba intensified activities to give advanced training to the personnel that would fundamentally be responsible for work and research. In 1971, the number of workers at the Institute increased significantly with the entry of a group of physics and chemistry graduates who had completed their education at the University of Havana.

At the same time we planned for new work, we strengthened cooperation between the National Nuclear Research Institute and the State Committee for the Use of Atomic Energy from the USSR, including the signing of new agreements on advice and the visits of Cubans to Soviet nuclear centers. Regarding international relations, they were established — and have been maintained — since the founding of the Institute, especially with the International Atomic Energy Organization under the United Nations, with headquarters in Vienna, the Cuba-USSR Unified Nuclear Research Institute, the Sossendorf Central Institute in the German Democratic Republic, and the CEMA Permanent Committee for the Peaceful Use of Atomic Energy.

Cienfuegos Powerplant

Fulfilling the energetic plans of the Cuban Government and as a result of the enthusiastic cooperation of our Soviet brothers, the agreements for the construction in Cuba of the first nuclear powerplant were signed.

Talks began in Moscow in 1974. At that time, the agency involved was the Ministry of the Electrical Industry and later, the Academy of Sciences, the ministries of Public Health, Mining and Interior and other government organizations came to participate. Two years later, research began for the location of the site in the central area of the island.

"Why in the central region?" we asked engineer Alfonso Afont Pifat, deputy director of the First Nuclear Powerplant Budgeted Investment Unit of the Ministry of Basic Industry.

"The reason is the requirements of our national electric power system," Afont explained. "There is obvious industrial development in the central region of Cuba. The area chosen meets the hydrological, geological and other needs."

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"What is the main difference between a thermonuclear powerplant and the plants in use today?" we asked.

"A thermonuclear powerplant is a plant that generates electric power, like those at Mariel, Rente and Cienfuegos. The difference lies in the fact that its main source of energy is the process of nuclear fission, which replaces the burning of oil."

"What is fission?"

"It is a type of reaction in which the neutron from a source emitting neutrons or from a previous fission strikes a uranium nucleus, which divides (splits) into two light nuclei. In this reaction, a large quantity of energy is given off.

"Uranium (nuclear fuel) is a cheaper and safer source. Our solution lies in building plants that generate electric power by using this radioactive element, but for this, we need a substantial number of highly skilled specialists. A plant of this type requires the services of many high- and intermediate-level technicians. At both levels, most personnel will need complete nuclear training."

High-level personnel now receive training at the School of Nuclear Science and Technology of the University of Havana and at specialized institutes in the USSR. The rest of the personnel for the powerplant includes graduates of the country's university centers, where additional training is received.

Intermediate-level personnel will be trained at the Cienfuegos Nuclear Polytechnical School, which will be set up in September of this year, with the beginning of the 1981-1982 school year, where skilled workers will also be trained.

The polytechnical school is being built near the site where the thermonuclear powerplant will be and at the present time, final touches are being put on the large, modern building by workers from the Industrial Projects Construction Enterprise No 6, which will also build the powerplant.

With the beginning of this school year in the new facilities of the polytechnical school, the students will study intermediate-level nuclear technology and intermediate-level automatic control. Graduates of this center will first go to the Juragua powerplant. This includes technicians as well as skilled workers. All working personnel will receive the indispensable training in thermonuclear technology. In addition, every worker must study and pass the standards of radiological protection and work safety for this type of plant.

The polytechnical school has seven laboratories: physics, nuclear physics, automatic control, metals, chemistry and biology, chemical analysis, electronics and electrical engineering. It has six shops: assembly, operation and steam generator and reactor repair, dosimetry, electronuclear powerplants, central assistance and reagent protection, languages. There will be five senior teaching posts.

Like all centers of study that the Revolution has built and continues to build for intermediate-level education, this school has its administration, teaching administration, meeting room, files, administration of nuclear activities, foreign

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technical assistance office, theater, student dormitories, faculty dormitories, recreation and living rooms, clinic, barbershop and beauty salon, kitchen, dining room, green space and playing fields.

Anatoli Cherbakov, Soviet electromechanical engineer who has been responsible for the setting up of the laboratories, offices and workshops of this plant as well as of the Armando Garcia Aspuru Energy Polytechnical School in Santiago de Cuba, told us:

"I have been in Cuba for 3 years. I like this country very much; the Cubans are very friendly and brotherly. It is a pleasure to work with them, whether they be construction workers or professors. They are all happy, enthusiastic, hardworking and content. The students are magnificent. They are already reaping the fruits from the Santiago polytechnical school. These young people are very good technicians and they will be very useful in the field of electric power."

Comrade Cherbakov talked to us in Spanish about our customs, the fun-loving nature of the Cubans, and he expressed his regret over leaving Cuba so soon even though his work contract has been completed.

"I have been very happy in Cuba. I am grateful for all the attention I have received, but I want to say that with the same willingness that I have come to this beautiful country, the first free territory in America, I would go to Ethiopia, Angola, Nicaragua or wherever my cooperation is needed. We communists practice proletarian internationalism with true pleasure because this is part of our Marxist-Leninist education."

5 de Septiembre Polytechnical School

We visited the 5 de Septiembre Polytechnical School in Cienfuegos, where we were welcomed by Director Francisco Mendez and other members of the board of directors. We were informed about the progress of students beginning their studies in nuclear technology. They and a group enrolled at another polytechnical school will make up the class of the new polytechnical school that will open in September.

"There is no lack of difficulties," the director told us, "but they are being resolved. These young people are very promising."

We were able to talk at length with several students, all of whom expressed the importance of the career they have chosen. Orestes Morales, one of the most enthusiastic, said he was convinced that "energy is a fundamental branch for our country's economy. Cuba needs to develop its industries," he said, "and to create many more. For this purpose, we need large amounts of electric power, which can only be obtained from nuclear powerplants."

"What does this career mean to you?" we asked him.

"For me, it means a great deal. I like the field of energy. I visited the Carlos Manuel de Cespedes Thermoelectric Powerplant to see its operation because nearly all of its machinery is like that of a thermonuclear plant. The difference is the reactors."

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University of Havana

It is not widely known that at the University of Havana, the School of Nuclear Science and Technology trains high-level specialists in nuclear energy.

Dean Jose Roig told us that the graduates will work at the Juragua Powerplant and will teach at the school or do research for the ININ.

He continued:

"Although our school will begin its operations this year, nuclear energy was already being taught at the Jose Antonio Echeverria Advanced Polytechnical School. That is why we have students at all levels in the field. In July, we shall have a new class of engineers graduating in nuclear energy. The school has connections with the Research Institute and with the Ministry of Basic Industry in the area of teaching and in research. Students practice or do research for the national enterprises, as do the professors."

Personnel

To use a phrase in vogue, Cuba already has a number of duly qualified technicians, some working for the thermonuclear powerplant. The first group of Cuban engineers went to the Soviet Union in 1971 to receive postgraduate training in Moscow. They worked at the Novovoronezh Powerplant. In 1973, another group of university graduates studied at the same centers. They all had some background in nuclear energy that they obtained in Cuba. In 1975, more graduates went.

Those specializing in the USSR are working for the Projects Enterprise of the Ministry of Basic Industry, in the central offices of that ministry, in the Juragua Budgeted Investment Unit and at the University of Havana.

"There is a fourth group," Daniel Calcagno, a thermonuclear technician, told us, "made up of comrades who in February completed their special training at the Moscow Energy Institute. They completed thermophysics for 5 years. Previously, they had had preparatory studies and Russian in Cuba for 1 year. In May, several members of the group joined the Juragua Budgeted Unit."

There we had the opportunity to meet with engineers Miguel A. Perez Jardines and Luis Angel Medina Ramos. Both decided to give us a single response to our questions. They told us:

"Our group was made up of comrades who had belonged to the Nuclear Physics Interest Club of the Lenin Vocational School. We met because of our interest in the field and were lucky enough to have the help of a highly trained professor who had studied in the USSR. His classes prepared us for the activity to which we would finally devote ourselves. There were plans coordinated between Iconsomol and the UJC [Union of Young Communists]. Upon our return, we went into production. We are anxious to serve science, technology and the Revolution wherever we would be most useful, but we believe that it is here, in Juragua, where we must begin our work."

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Training

The training of Cuban specialists in this field of unlimited possibilities moves steadily forward. Through the signing of an agreement with a Study and Training Center at the Novovoronezh Powerplant, personnel will be trained for operations, laboratory work and maintenance. The first group will begin its training at the end of this year. Others will leave for Novovoronezh in 1982.

Electrical engineers from the Carlos Manuel de Cespedes Thermoelectric Powerplant with some background in nuclear energy have been chosen to take a course in theory and practice in the Soviet Union lasting 1 year. We talked with a number of them and they all agreed that the trip will complete their professional training. The knowledge they acquire will be very beneficial when, on their return, they go to work for the first nuclear powerplant in Cuba.

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LIBYA

'UNUSUALLY LARGE' URANIUM PURCHASES NOTED

PM311442 London THE TIMES in English 29 Aug 81 p 4

[Dispatch "from our correspondent": "Libya Buys Uranium Secretly"]

[Text] Paris, 28 Aug--Libya has bought unusually large amounts of uranium in the first half of this year from Niger, the West African producer, leading to speculation that it is acting for other Arab countries with more advanced nuclear capacities.

In the first half of 1981, Libya has bought 1,212 tons of uranium from Niger, three times as much as in the whole of 1980, according to official figures published yesterday in the Niger capital, Niamey.

What need Tripoli can have of such quantities is obscure since Libya has only a small, Soviet-supplied research reactor which uses small amounts.

Sources said it was possible that part of the total given by the Niger authorities was accounted for by deliveries made last year and not recorded immediately. But even the total announced for 1980-380 tons—was large for a country with Libya's limited requirements.

Experts in Paris suggested that Libya might be selling the uranium to other countries, such as Iraq, which bought 100 tons of uranium from Niger in the first half of this year. Pakistan and Syria were two other possible final destinations mentioned.

Niger's deliveries to Libya in the first half of the year were half as much as was sold to France. But they made Libya Niger's second biggest customer ahead of Japan which took 816 tons and Spain which received 300 tons.

Libyan purchases of uranium from Niger stood at 150 tons in 1979, rose to 380 tons last year, and then bounded ahead this year.

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FRANCE

NUCLEAR PROGRAM SEEN CONTINUING IN SPITE OF OPPOSITION

Paris LE NOUVEL OBSERVATEUR in French 8 Aug 81 p 30

[Article by Jacques Mornand]

[Text] The freeze on the construction of five nuclear power plants, decided on at the last council of ministers session on 30 July, has been very badly received. It was too much, in the opinion of some people, and too little, according to others.

The environmentalists consider these measures inadequate. They even use the word "treason," since the construction of the Nogent-sur-Seine (Aube department) and Penly (Seine-Maritime) power plants, the enlargement of the waste reprocessing center at La Hague, and the start of construction of the Creys-Malville breeder reactor will continue. The CFDT [French Democratic Confederation of Labor] uses approximately the same terms.

On the other side, the other unions, the CGT [General Confederation of Labor], the FO [Workers Force], and the CFTC [French Confederation of Christian Workers], along with the Communist Party, have unequivocally denounced this "abandoning of the policy of national energy independence." They fear that the decreased activity in the nuclear sector will further worsen unemployment. At the sites where work has been halted, the workers whose jobs are threatened continue to demonstrate noisily. Fears are sharpest in Lorraine. At Cattenom (Moselle department), during the weekend which marked the start of the traditional August vacation period, angry workers blocked the highway leading into Belgium, causing a monstrous traffic jam 30 kilometers long.

These reactions show that the national debate about our entire nuclear policy, scheduled for the fall in compliance with Francois Mitterrand's campaign promises, will be a heated one.

In reality, the steps taken by the government on 30 July are symbolic and conservative in nature. The slowdown which was called for might be of a very short duration. There is really nothing

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irreversible about it. It indicates that the government does not want to decide in advance the outcome of the debate that will be held over the next several weeks in parliament and in regional and departmental assemblies. There the parties, unions, environmental groups, etc. will have to decide—quite rapidly, it seems—before the final decision which may or may not challenge the vast nuclear program begun during the administration of Pierre Messmer in 1974, at the time of the first oil crisis.

Controlling the Gas Pipeline

In the debate which is about to start, the government of Pierre Mauroy will not be neutral. It will introduce a bill that is now being drafted. The criteria included are: the prospects of economic growth and energy consumption, independence, and the decentralization of programs. However, the final preparation of this bill is a sensitive matter. First of all, because even inside the PS [Socialist Party], there are different groups; supporters and opponents of nuclear development clash there just as they do all over the country. Furthermore, the room for maneuver of the minister of energy, Edmond Herve, is limited. In fact, the situation of our country, which lacks essential energy resources, will not let us do just anything. Any cutback in our nuclear program will have to be balanced by an increase in some supply source or by equivalent energy savings.

Petroleum

Despite the slump in the world petroleum market right now and the reduced prices offered by producers, the price per barrel is continuing to rise, because of the increase in the dollar, the reference currency. So the price for super gasoline in early August just went over 4 francs per liter.

Coal

Even though French coal is expensive, the government is thinking of increasing its production. Production should reach about 30 million tons in 1990, compared with about 20 tons in 1980. For the 1982 budget, the Charbonnages de France (French Coal Mines) investments will be increased by 42.70 percent in relation to 1981.

Gas

Investments for the French Gas Company are being increased 25.9 percent next year. But this will affect storage and distribution facilities. It will not give us one cubic meter more of gas of French origin. Production at the Lacq field has reached a plateau and will decline significantly in the future. Then we will have to import more and more gas from Algeria and from the Soviet Union.

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A big contract with the USSR has been in the negotiation phase for months now, jointly with some other countries, including Germany. But there is a security problem involved here. In case of a crisis, what would happen if Moscow decided to turn off the tap of the pipeline? Washington is sending out warning after warning on this issue. But Francois Mitterrand seems to have come around to the point of view of Helmut Schmidt, who favors this project.

Renewable Energy Resources

Solar, biomass, wind and tidal power should, according to Francois Mitterrand, supply 10 percent of our energy needs between now and the year 2000; this percentage is significantly higher than what had been planned earlier.

Savings

Efforts in this area have to be increased. But it will be an expensive process, because the savings that are easy have already been done. So now we will have to invest more than before to obtain comparable results. However, energy savings do offer one major advantage: saving energy creates jobs (insulating buildings, regulating heating, etc.).

Considering the variety of economic and political necessities facing it, the Mauroy government will probably have to choose a middle of the road course between the "all nuclear" approach favored by Giscard and EDF [French Electricity Company] and the "no" to nuclear power of the environmentalists. He might slow down the long-term program, considering the expected decline in the rate of growth of electricity usage. But he will probably decide to continue work in progress wherever it is well underway already. Whether we like it or not, we will probably have 45 nuclear power plants operating in 1987. They could then supply 60 percent of France's electric power.

Stopping this program cold would have incalculable financial consequences and would cause tens of thousands of jobs to be eliminated. In spite of everything that could be done to save energy and touse renewable energy resources, this would still mean an increase in our petroleum exports. And at the price of oil today, whowould dare suggest such a program to the French people?

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